

**Example #11: A 2.0 kg lab cart moving at 3.0 m/s catches up to and rear ends a 1.0 kg cart moving at 0.50 m/s. After the collision, the 2.0 kg cart follows the 1.0 kg cart at 1.2 m/s. Find the new velocity of the 1.0 kg cart.**

before

$$p_i = 2(3) + 1(.5) \\ = 6.5$$

after

$$p_f = 2(1.2) + 1v \\ = 2.4 + v$$

$$6.5 = 2.4 + v$$

$$\boxed{v = 4.1 \text{ m/s}}$$